

BLAST MONITORING REPORT
HM9C Hard Stone Quarry at Ta' Qaduma, l/o Mosta
18th December 2015

Details

Date	18-12-2015
Quarry number	HM9C – Ix-Xaghra Ta' Qaduma, l/o Mosta
Quarry operator	Carmel Vella Ltd.
ANFO Supplier	Framegrip Ltd.
Police escort	PC1107 – D Willis

Location and Time of Blasting

Two blasts were carried at 09:19 at the points as approximately indicated on the attached site diagram.

Summary of Blasting Conditions

Maximum charge per delay: 50Kg

Vibration limit: <4 mm/s (20 to 40Hz) at the nearest residential areas.

Air overpressure limit: 120 dB (L).

Site Specific Permit

Holes were within quarry boundaries and within the permitted depths.

Blasts were carried out according to the site specifications.

Weather Conditions

Humidity ^[1]	Wind ^[1]	Temperature ^[1]	Atm. Pressure ^[1]	Cloud Cover ^[2]
50%	6 Knot N	16C	1029 hPa	clear

[1] As reported by weather.maltairport.com on 18 Dec 2015 at 11:45 at Luqa Airport [2] Our observation

Comments

Holes are at bottom shelves of the quarry.

The two blasts were grouped together and detonated by means of two short-circuit-exploders in very quick sequence and captured as one event on the seismograph.

Notes

The seismograph was placed at the side of the road just outside the quarry as shown on the attached site diagram. The seismograph was set to trigger at 0.50 mm/s. The seismograph used is a MiniMate serial number BE9488

Readings

Blast Number	1	2
Time	09:19	
No. of Holes	9	9
No. of delays	9	9
Depth of Holes (m)	18	18
Max. Charge per Delay (Kg)	46	46
Total Charge (Kg)	413	413
Dist. from Seismograph (m)	220	220
PPV (mm/s)	2.46	
Frequency (Hz)	47	
Air Overpressure (dB L)	116.4	
Scaled Distance (m kg^{-1/2})	32.4	32.4

Burden is an average of 2 metres and distance between holes is an average of 2.5 metres.

Weights in kilograms are rounded-up to the nearest unit, and depth in metres is rounded to the nearest ½ unit. Displacement between holes and the seismograph is measured using the online version of MEPA's Map Server and is accurate to the nearest 10 metres. Number of holes, their depth, burden, and the amount of ANFO used are as given by the quarry operator. Scaled distance and maximum charge per delay are calculated from the primary data. Weights are rounded-up to the nearest kilogram and the depth is rounded to the nearest ½ meter.

Observations

There was no flyrock outside quarry boundaries. No damage to the surroundings was observed after the blast.

Anthony Cini B.Sc.

DATA COLLECTION SHEET

Date:	18 Dec 2015		MIC for HM9C is 50Kg	
Quarry Name & Number:	HM9C - Ix-Xaghra ta' Qaduma l/o Mosta	Quarry Operator:	Polidano Bros. Ltd.	
Police Escort:	No: PC1107 Name: D. WILLIS			
Blasting carried out by:	Company: FRAMEGRIP LTD.	Name:		
Seismograph readings by:	A CINI			

BLAST DETAILS

Blast	Time	Holes	Delays	Dist. (m)	Depth		Total charge		Max. Chrg.	PPV mm/s	Freq. (Hz)	Air (dB)
					(ft)	(m)	Bags	(kg)				
1		9	9	220	60	18	16 1/2	413	46	2.46	47	116.4
2		9	9	220	60	18	16 1/2	413	46			
3												
4												
5												
6												
7												
8												
9												
10												
11												

BLAST CHARACTERISTICS

Burden	Distance between boreholes: 2.5 m Distance from rock face (burden): 2 m
Levels of holes: (top/mid/low shelves)	bottom shelf.
Note any horizontal holes?	None
Note any blasts having holes of varying depths	None
Note any grouping of blasts?	Yes: Speed up process
Any other notable blasts characteristics	None.

OBSERVATION OF WEATHER CONDITIONS

Cloud Cover	0% [High / Low] Cloud clear	Precipitation	(No) Light / Medium / Heavy] showers
Wind	(calm) light breeze / strong wind]	Approx. direction:	[N (S) / E / W / / N/A]

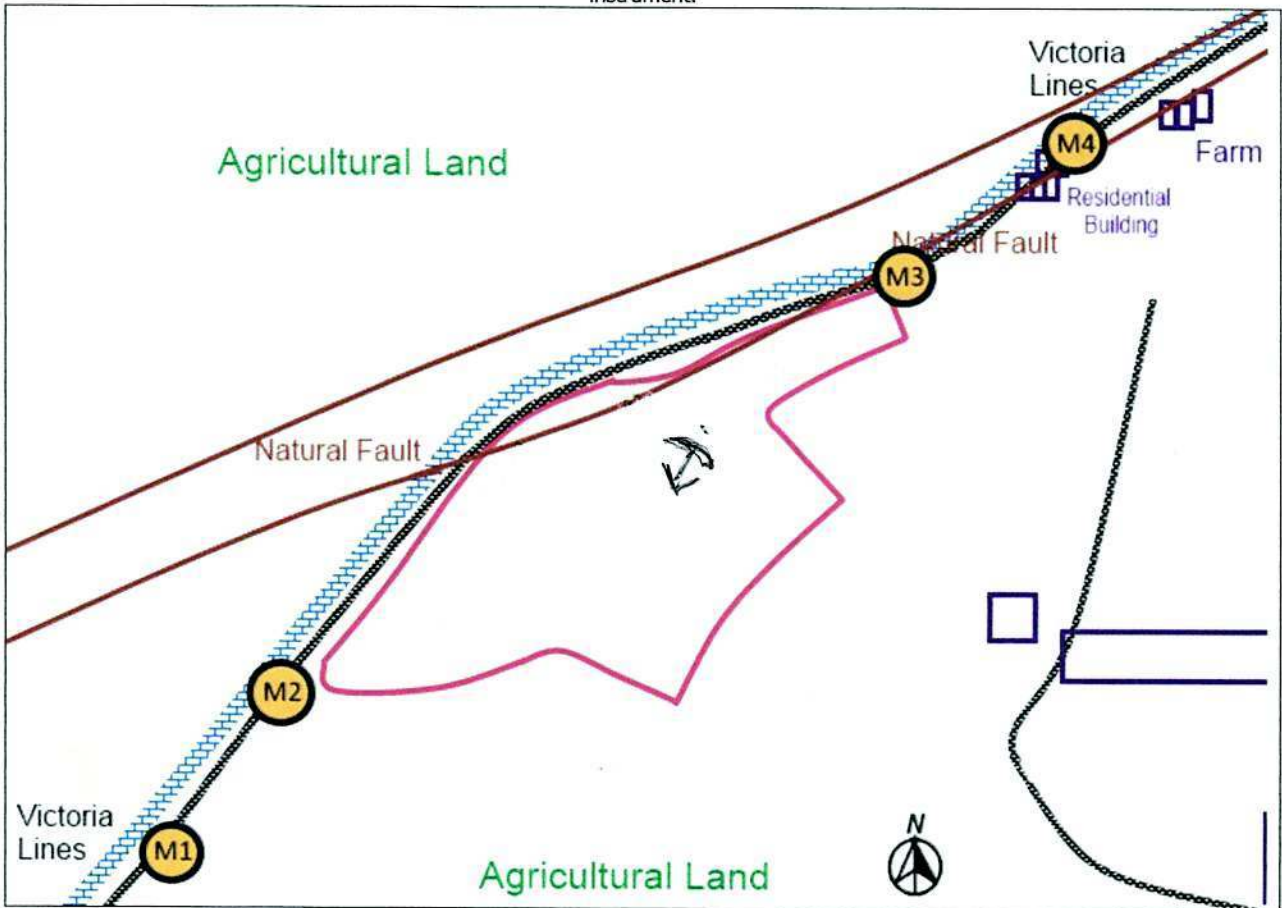
OTHER

Any visitors before/during/after blasts?	No body.	[if yes, who? why?]
Any complaints from neighbours?	None Reported to us	[names/organisations]

MONITORING DETAILS

Location of Seismograph	<input type="checkbox"/> M1: Along road as indicated	<input checked="" type="checkbox"/> M2: Along road as indicated	<input type="checkbox"/> M3: Along road as indicated
	<input type="checkbox"/> M4: Along road as indicated	<input type="checkbox"/> Other: /	

Indicate location of blasts on the diagram below after having observed their location in respect to quarry boundaries and other landmarks. Number each blast in the order that they are planned to be detonated and include rock-face direction. Indicate the location of the instrument.



Observation after blast:	No damage. No flyrock outside quarry	[Note any flyrock outside quarry, excessive noise, dust clouds, and damage to surroundings]
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Signatures

Perceval
Police escort

S. M...
f/ Quarry operator

Anthony...
f/ ems

Date/Time Tran at 09:19:06 December 18, 2015
Trigger Source Geo: 0.510 mm/s
Range Geo: 31.75 mm/s
Record Time 2.0 sec at 4096 sps

Serial Number BE9488 V 10.72-8.17 MiniMate Plus
Battery Level 6.0 Volts
Unit Calibration August 20, 2015 by Datum Monitoring
File Name K488G5PG.JU0

Notes

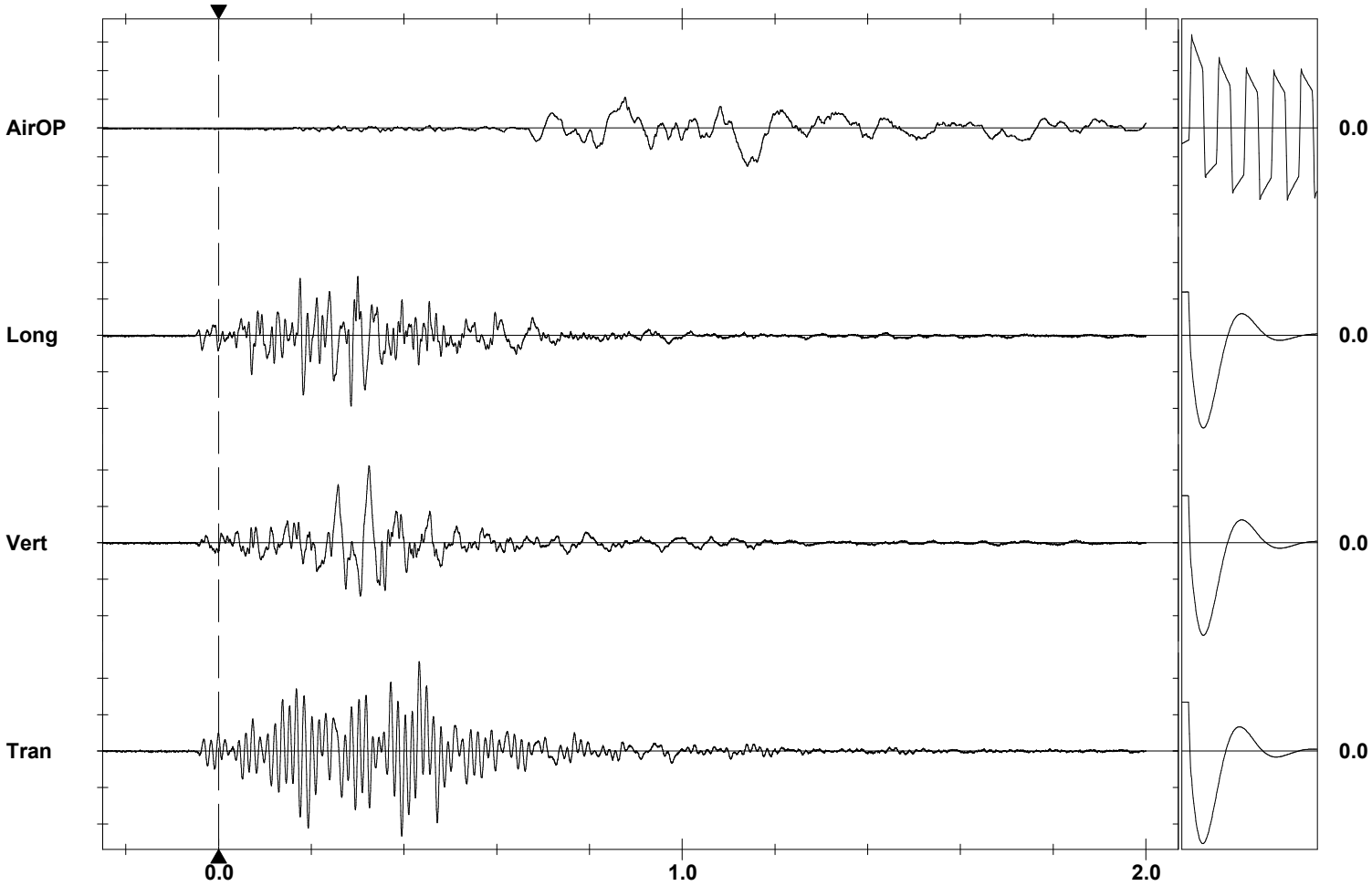
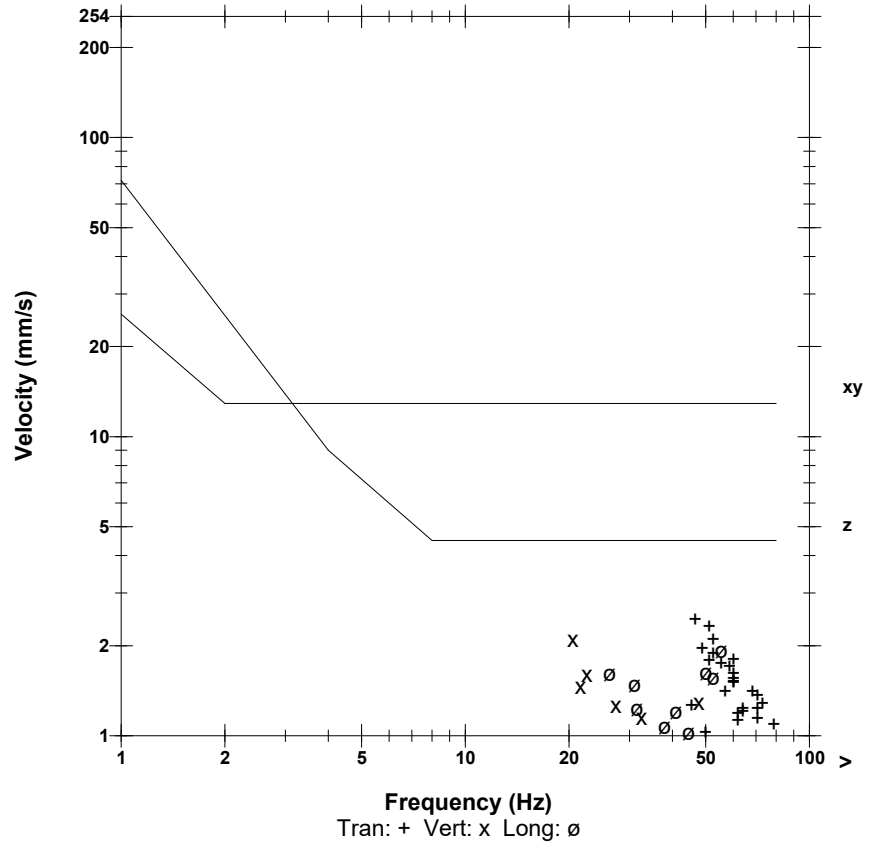
Location: Quarry Blasting
 Client:
 User Name: ems
 General:

Microphone Linear Weighting
PSPL 116.4 dB(L) 13.25 pa.(L) at 1.140 sec
ZC Freq 6.4 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 562 mv)

	Tran	Vert	Long	
PPV	2.461	2.111	1.937	mm/s
PPV	58.82	57.49	56.74	dB
ZC Freq	47	20.5	55	Hz
Time (Rel. to Trig)	0.433	0.324	0.286	sec
Peak Acceleration	0.086	0.053	0.080	g
Peak Displacement	0.008	0.013	0.007	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.3	7.2	Hz
Overswing Ratio	3.9	4.1	4.3	

Peak Vector Sum 2.596 mm/s at 0.395 sec

BS 6472:1992 CURVE 32



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 1.000 mm/s/div Mic: 10.000 pa.(L)/div
Trigger =

Sensor Check